

# NUTRITION IN PHYSICAL ACTIVITY AND SPORT

MODULE	CONTENT	YEAR	TERM	CREDITS	TYPE
PHYSICAL ACTIVITY AND HEALTH	<i>Nutrition in physical activity and sport</i>	3º	1º	6	Optional
<b>LECTURER(S)</b>			<b>Postal address, telephone nº, e-mail address</b>		
Eduardo Jesús Guerra Hernández			Nutrition and Food Department, 3rd floor, Faculty of Pharmacy. Office No. 316. E-mail: ejguerra@ugr.es		
<b>DEGREE WITHIN WHICH THE SUBJECT IS TAUGHT</b>					
Physical Activity Sciences and Sports					
<b>PREREQUISITES and/or RECOMMENDATIONS (if necessary)</b>					
Have studied the subjects of Human Physiology and Biochemistry of Exercise					
<b>BRIEF ACCOUNT OF THE SUBJECT PROGRAMME (ACCORDING TO THE DEGREE ¿??)</b>					
<ul style="list-style-type: none"> <li>– Study of energy and nutrient requirements and recommended intakes for optimal health</li> <li>– Study of specific nutrient requirements for athletes and study of proper food to cover</li> <li>– Diets of training, competition and recovery</li> <li>– Study of the most common nutritional disorders in athletes</li> <li>– Assessment of nutritional status</li> </ul>					
<b>GENERAL AND PARTICULAR ABILITIES</b>					
<ul style="list-style-type: none"> <li>• CGI1; CGI2; CGI3; CGI5; CGI7; CGI8; CGP1; CGP3; CGP5; CGS1; CGS2; CGS3; CGS4; CPC5 (from the nutritional point of view); CPC6 (diets for training programs and sports)</li> <li>• Evaluate the nutritional quality of the diet (N1)</li> <li>• Assess nutritional status based on anthropometric, biochemical and dietary (N2)</li> <li>• Choose the most appropriate food based on its composition to make adequate and balanced</li> </ul>					



diets for athletes based on individual characteristics and type of physical activity performed (N3)

- Give nutritional advice to have an optimal health and a high performance sports (N4)

#### **OBJECTIVES (EXPRESSED IN TERMS OF EXPECTED RESULTS OF THE TEACHING PROGRAMME)**

- Understand and convey the basic principles of human nutrition with particular attention to the incorporation of nutrients that promote healthy lifestyles and optimal performance in sports
- Use and interpret tables of food composition and recommended intakes of energy and nutrients for healthy diets and design appropriate to different periods of sports activity (training, competition and recovery).

#### **DETAILED SUBJECT SYLLABUS**

THEORETICAL CONTENT:

##### MODULE I: INTRODUCTION

ITEM I. - Definition of nutrition, food, nutrition and dietetics. Food, nutrient, diet and nutritional intake. A brief history of the Nutrition and Food Science. Classification and food constituents.

##### MODULE II: ENERGETIC AND NUTRITIONAL REQUIREMENTS

ITEM II. - Energy requirements of the human organism. Components of energy metabolism: basal metabolism, thermogenesis induced by food and physical activity energy expenditure. Methodology for determining the energy expenditure.

ITEM III. - Nutritional requirements and recommended intakes. Nutritional goals. Energy value of nutrients. Database tables and food composition. Dietary Guidelines.

##### MODULE III: FOOD, NUTRITION AND METABOLISM

ITEM IV. - Carbohydrates. Classification. Food Sources of Carbohydrates. Digestion of carbohydrates. Glycemic index and its use in the practice of sports. Nutritional requirements and recommendations. Use and needs of carbohydrates before, during and after the competition ...

ITEM V. - LIPIDS. Composition and classification. Food sources of lipids: fats of vegetable origin, animal fats. Digestion and lipid metabolism. Nutritional requirements and recommendations. Lipid utilization and needs of athletes. Relationship between fat consumption and health

ITEM VI. - PROTEIN. Composition and classification. Food Sources of protides. Digestion and protein metabolism. Evaluation of protein quality. Nutritional requirements and recommendations. Utilization and protein needs of athletes. Relationship between protein intake and health.

ITEM VII. - VITAMINS. Rating: water soluble vitamins and fat soluble. Food sources of vitamins. Vitamins and biological analeptic sports. Requirements and recommendations of vitamins. Use and vitamin requirements in athletes. Deficit, excess, and health.

ITEM VIII. - MINERALS. Rating: macro and micro. Food sources of minerals. Requirements and recommendations of vitamins minerals requirements in certain groups of athletes. . Deficit, excess, and health.

ITEM IX. - WATER BALANCE. Assessment of need regular water. Role of water in thermoregulation. Dehydration. Classification and composition of the beverages. Fluid administration in athletes. Factors



influencing fluid replacement.

#### MODULE IV: NUTRITION AND DIET IN TRAINING, COMPETITION AND RECOVERY PERIOD

ITEM X. - DIETARY ALLOWANCES FOR THE PERIOD OF TRAINING. Establishment of single system. Serving training: theoretical bases and practical examples of menus.

ITEM XI. - SPORTS DIET IN LONG TERM

REQUIRING A SUPPLY DURING THE COMPETITION. Cycling. Triathlon, marathon, mountain climbing, Nordic skiing, others. Ration recovery. Theoretical and practical.

ITEM XII. - SERVES FOOD IN SPORTS EQUIPMENT. SPORTS MEDIA DURATION. Football, basketball, handball and others. Theoretical and practical.

ITEM XIII DIET IN NOT ALLOWING A SPORTS SUPPLY DURING THE COMPETITION. Characterized by an effort Sports brief: pole vault, jumping length. Judo, weightlifting other sports characterized by a continued effort, middle distance. The problem of the series. Theoretical and practical.

#### MODULE V

ITEM XIV. - Nutritional ergogenic aids

ITEM XV. - Nutritional disorders in athletes. Nutrition and immune function in athletes

ITEM XVI. - Nutritional Myths common in athletes. Correct use of the nutritional needs of athletes of web pages.

#### PRACTICAL CONTENT

Seminars and practical

PRACTICE I - Calculation of energy needs of the individual

PRACTICE II. - Table of food composition

PRACTICE III. - Assessment of nutritional status

PRACTICE IV. - Development of diets for different sports

PRACTICE V. - Preparation of diets in different stages of physical activity.

PRACTICE VI.- Introduction to the anthropometric and nutritional assessment tool

#### READING

##### Essential reading

- NUTRICIÓN Y AYUDAS ERGOGÉNICAS EN EL DEPORTE. J. González Gallego y J.G. Villa. Síntesis, Madrid (1998)
- NUTRICIÓN, SALUD Y RENDIMIENTO DEPORTIVO. P. Pujol Amat, Espaxs, Barcelona, 3ª edición (2002)
- SPORT NUTRITION. Asier Jeukendrup and Michael Gleeson. Human Kinetics. Champaign, IL, (2004)
- NUTRICIÓN PARA LA SALUD, LA CONDICIÓN FÍSICA Y EL DEPORTE. Melvin H. Williams. McGraw Hill, Barcelona, (2006)
- NUTRICIÓN EN EL DEPORTE: AYUDAS ERGOGÉNICAS Y DOPAJE. Javier González Gallego, Pilar Sánchez Collado, José Mataix Verdu, Díaz de Santos: Fundación Universitaria Iberoamericana, (2006).
- AYUDAS ERGOGÉNICAS: SUSTANCIAS QUE PUEDEN MEJORAR EL RENDIMIENTO DEPORTIVO. Javier Alonso Alfonseca, Consejería de Turismo, Comercio y Deporte, Sevilla, (2006)



- ESSENTIALS OF SPORTS NUTRITION AND SUPPLEMENTS. Edited by José Antonio... [et al.] Totowa, NJ: Humana Press, 2008.
- TRASTORNOS DE ALIMENTACIÓN EN EL DEPORTE . Joaquín Dosil Díaz. Wanceulen, Sevilla, (2003)
- LA GUÍA DE NUTRICIÓN PARA MARATONIANOS DE NANCY CLARK: CONSEJOS PARA LOS CAMPEONES DEL DÍA A DÍA. Nancy Clark. Paidotribo, Barcelona, (2006)
- AYUDAS ERGOGÉNICAS Y NUTRICIONALES. Juan Carlos González González.:Paidotribo, Barcelona, (2006).
- SPORTS NUTRITION (fats and proteins). Judy A. Driskell, CRC Press, Boca Raton, (2007)
- SPORTS AND EXERCISE NUTRITION. W. D. McArdle, F.I. Katch and V.L. Katch. Tercera Edición. Wolters Kluwer, Philadelphia (2009)
- NUTRICIÓN EN EL DEPORTE: Un enfoque práctico Louise Burke. Editorial Médica Panamericana, Madrid (2010)
- NSCA's GUIDE TO SPORT AND EXERCISE NUTRITION. Bill I. Campbell and Marie A. Spano. Human Kinetics, USA, (2011)
- GUÍA PRÁCTICA DE NUTRICIÓN DEPORTIVA-Asker Jeukendrup. Tutor, Madrid, (2011)

### **Additional reading:**

#### **Nutrition**

- MODERN NUTRITION IN HEALTH AND DISEASE. 8ª Ed. M.E. Shils, J.A. Olson y M. Shike. Lea & Febiger, Malvern, USA (1993)
- DIETOTERAPIA DE, Krause L. Kathleen Mahan y S. Escott-Stump. Elsevier Masson 12ª Edición, Barcelona (2009)
- NUTRICIÓN: Texto y Atlas, Hans Biesalski y Peter Grimm, Editorial Médica Panamericana, Madrid (2009)
- INGESTAS DIETÉTICAS DE REFERENCIA (IDR) PARA LA POBLACIÓN ESPAÑOLA. Federación Española de Sociedades de Nutrición, Alimentación y Dietética (FESNAD). Barañain (Navarra): EUNSA, 2010
- FUNDAMENTOS DE NUTRICIÓN Y DIETÉTICA. BASES METODOLÓGICAS Y APLICACIONES Martínez y Portillo Editorial Panamericana 2010

#### **Nutrition and Food Science**

- NUTRICIÓN Y ALIMENTACIÓN HUMANA (Tomos I y II) . J. Mataix (EDITOR). Ergon, Madrid (2009)
- TRATADO DE NUTRICIÓN (Tomos I-IV). A. Gil (EDITOR). Editorial Panamericana, Madrid (2010)
- QUÍMICA DE LOS ALIMENTOS. Belitz HD, Grosch W (1997), 2º ed. Ed. Acribia. Zaragoza

#### **Databases**

- Sport discos

#### **RECOMMENDED INTERNET LINKS**

- [www.gssiweb.com](http://www.gssiweb.com) (Gatorade Sports Science Institute)
- [www.nismat.org](http://www.nismat.org) (Nicholas Institute of Sports Medicine and Athletic Trauma)
- [www.sportsci.org](http://www.sportsci.org) (Sport Science)



- [www.nutrition-society.org](http://www.nutrition-society.org) (Nutrition society)
- <http://www.fns.usda.gov/fns/> (USDA Food and Nutrition Service)
- [www.acsm.org](http://www.acsm.org) (American College of sports medicine)
- [www.sportsnutrition-society.org/](http://www.sportsnutrition-society.org/) (International society of sports nutrition)
- [www.scandpg.org](http://www.scandpg.org). (Sports, cardiovascular and wellness nutrition)

